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ABSTRACT

This paper presents an analysis of the job performed by an offset press operator (alternate title is offset duplicating machine operator) of a Multilith 1250 W. First covered is work performed, as follows: prepares dampening unit for printing run, prepares inking unit for printing, readies printing plate for printing, sets up press for running, prepares entire printing unit for production and completes production run, and performs press washup at end of day or with change of color. Next discussed is the performance requirements regarding responsibility, job knowledge, mental application, and dexterity and accuracy. In conclusion the paper covers equipment, materials, and supplies; definition of terms; and general comments. (EM)

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JOB ANALYSIS SCHEDULE

1. Job title OFFSET PRESS OPERATOR (MULTILITH 1250 W)

2. Date NOVEMBER, 1974

Number of sheets 10

3. Alternate titles OFFSET DUPLICATING MACHINE OPERATOR

4. Dictionary title and code OFFSET-DUPLICATING MACHINE OPERATOR (printing and publishing) 651.782.

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5. WORK PERFORMED:

Prepares and operates sheet fed offset Printing Press to produce single and multicolor copies of type matter and illustrations, on various sizes and weights of paper, through the process of photo-offset reproduction.

1. Prepares dampening unit for printing run: Prepares dampening fountain solution by combining fountain concentrate and water in press fountain bottle, in ratios prescribed by concentrate manufacturer. Screws control cap on bottle and positions bottle on fountain bracket. Engages ductor roller contact lever, and turns press handwheel counterclockwise to contact ductor roller to fountain roller. Dampens ductor roller by manually rotating fountain roller knob at least five times. Sets fountain solution feed control lever to second position, and starts press, using press switch, to allow ductor roller to mechanically transfer dampening solution from dampener fountain roller to distributor roller, and then to form roller. Allows press to complete thirty revolutions or more, until form roller is

Analyst Anthony J. Feyock Reviewer _____

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damp, disengages ductor roller contact lever, and stops press. Checks and adjusts contact pressure of dampener form roller to plate, as necessary, by following procedures and specifications outlined in operator's manual, to maintain adequate dampening of plate. Replaces soiled dampener roller covers, as necessary, to maintain efficiency of dampening unit, by following cover manufacturer's application instructions. (2-10%)

2. Prepares inking unit for printing: Determines color of printer's ink to be used for job by referring to job order specifications. Rotates press handwheel counterclockwise, until ink ductor roller is out of contact with ink fountain roller, preventing inking of ductor roller. Adds ink to ink fountain with Ink Cartridge Gun, or with Ink Knife when using canned ink. Brings ink ductor roller into contact with ink fountain roller, by manually rotating handwheel counterclockwise to prepare ink ductor roller for inking. Turns ink fountain roller crank counterclockwise manually with right hand, simultaneously regulating flow of ink to fountain roller and ductor roller by adjusting ink fountain screws with left hand, until desired bead of ink appears on ductor roller. Sets ink control lever on position number four, starts press, and runs until all ink rollers are covered with light, even film of ink. Increases flow of ink, if necessary, by moving ink control lever to higher setting. Checks and adjusts contact pressure of ink form rollers to plate, as necessary, by following procedures and specifications outlined in operator's manual, to maintain adequate inking of plate image. (2-15%)

3. Readies printing plate for printing: Obtains printing plate, for job, from job jacket or plate rack. Examines plate to verify accuracy of plate copy, by comparing it with customer's camera copy or previously printed sample. Rotates plate cylinder clockwise with press handwheel to engage plate cylinder head clamp opening mechanism, until cylinder head clamps open. Inserts head of plate into head clamps with right hand and rotates handwheel counterclockwise with left hand to allow head clamps to grasp plate. Continues rotation of handwheel, maintaining tension on tail of plate with right hand, until cylinder tail clamp is in working position. Clamps tail end of plate onto cylinder, using both hands to hold plate and engage cylinder tail clamp. (1-5%)

4. Sets up press for running: Determines size, weight, and color of paper for job by referring to job order specifications. Checks size of paper, if unmarked, with rule. Prepares paper table for loading by pressing table release lever to right and turning paper table crank counterclockwise, to lower table to halfway position. Loads paper magazine with specified paper, breaking sheets apart by manual fanning to prevent mechanical feeding of more than one sheet at a time. Centers paper on paper table, using locating scale on paper magazine. Adjusts vertical magazine paper guides by raising magazine lock lever and manually bringing guides into contact with leading corners of paper to obtain snug, but not binding, contact with paper. Moves side guides and end guide manually into light contact with paper to assure straight feeding of paper into register board. Engages table release lever and turns table crank clockwise to raise paper stack to within one inch of suction feet at their lowest position. Adjusts operating height of paper stack mechanically by starting press, allowing stack to rise, controlling final stack height with paper height control screw. Makes fine adjustments on paper supports, sheet separators, blower tubes, suction feet, pullout rollers, and multiple sheet detector, following operator's manual instructions, to limit mechanical feeding of sheets into press to one sheet for every pickup cycle of suction feet. Turns blower/vacuum switch on, regulating degree of vacuum at suction feet and velocity of air stream at blower tubes, by adjusting blower and vacuum control knobs, to obtain consistent separation and pickup of sheets. Feeds single sheet from paper stack onto register board, to position for printing, by snapping press switch on and off until sheet contacts stop fingers. Parallels jogger guide to side of sheet, using adjusting screws, to obtain squared positioning of sheet on register board. Moves stationary guide/register spring against opposite side of sheet, using squeeze clamp, to obtain consistent register of every sheet feeding through press. Completes related adjustments of conveyor tapes, paper retainers, and tape rollers, following instructions in operator's manual, to obtain accurate sheet travel along register board. Feeds sheet through cylinders manually until leading edge of sheet passes lower ejector roller, and positions upper ejector rollers and rings on non-image marginal areas of sheet, to avoid contact with printed areas. Prepares paper receiver tray to accept consistent delivery of printed paper by adjusting tray side guides, paper stop, and paper retainer. (3-20%)

5. Prepares entire printing unit for production and completes production run: Turns ink and dampener form roller control knobs to on position manually, permitting form rollers to be controlled by single lever control (see comments). Washes printing plate with cotton wipe saturated with dampening solution, to dissolve protective gum coating. Starts press and adjusts press speed with variable speed control knob, to adapt press speed to type of paper used and ink coverage to be achieved. Contacts dampener form roller to plate, by moving single lever control to moist position to dampen plate. Contacts ink form rollers to plate by moving single lever control to ink position to ink plate image. Moves single lever control to print position to allow plate cylinder to contact blanket cylinder, offsetting plate image onto blanket. Turns blower/vacuum switch on and feeds at least two sheets through press to print sheets. Turns blower/vacuum switch off, moves single lever control to off position and stops press, to examine quality of image imprint on press sheet. Makes new plate, as necessary, by operating Platemaker (see comments). Changes vertical and lateral positions of image on paper, as necessary, to conform to customer's layout specifications, using adjustments and techniques set out in operator's manual. Controlls printing pressure between blanket and impression cylinders by making adjustments in impression adjusting sector, to correct pressure flaws in image imprint. Replaces printing blanket containing flaws by following instructions outlined in operator's manual (see comments). Sets sheet counter on zero position, starts press, moves single lever control to moist, ink, and print positions, and feeds paper through press, checking quality of printing as press sheets enter receiving tray. Completes job, printing quantity specified in job order, disengages single lever control and form roller control knobs, and stops press. Cleans ink from plate and blanket, stroking surfaces with solvent dampened cloth with right hand, while rotating handwheel counterclockwise with left hand. Removes plate from cylinder by opening tail clamp, grasping tail end of plate with right hand, maintaining tension on plate and rotating handwheel clockwise with right hand until head clamps open, releasing plate. Prepares plate for storage by applying process gum to surface and buffing dry with cotton wipes, to protect plate from oxidation and scratching. Prepares printed job for pro-

cessing through finishing operations, by completing necessary production information on job order, storing plate in job jacket or rack, and neatly stacking printed sheets. (3-40%)

6. Performs press washup at end of day or with change of color: Disengages dampener ductor roller contact lever and ink control lever to prevent feeding of dampening solution and ink to units. Removes dampener form roller, following operator's manual instructions, to prevent soiling of fabric cover during press washup. Clamps washup mat to plate cylinder, using same technique as practiced with printing plate, to absorb ink from inking unit. Engages ink form roller control knobs, starts press, and applies washup solvent to oscillator ink roller in small amounts with plastic squirt bottle, allowing solvent to work into ink rollers. Contacts ink form rollers to washup mat by moving single lever control to ink position, to allow mat to absorb ink and solvent from ink rollers. Moves single lever control to off position, stops press, and removes soiled mat, using same technique as practised with printing plate, to clear cylinder for fresh mat. Repeats mat washup process, as necessary, until inking unit is sufficiently clean. Removes ink from ink fountain with ink knife, to allow removal of fountain from press. Removes ink fountain from press, and manually cleans fountain with solvent dampened cleaning cloths to eliminate all traces of ink. Cleans plate cylinder and blanket manually with solvent dampened cloths to eliminate all traces of ink and dampening solution. Lubricates press daily and weekly with oil can and grease gun, following operator's manual instructions, to insure maximum life of bearings and gears. (1-10%)

PERFORMANCE REQUIREMENTS

6. Responsibility

Responsible for being aware of safety hazards inherent in printing press mechanisms, such as rotating cylinders, gears, and rollers. Is responsible for the cleaning, lubrication, and proper mechanical manipulation of a printing press worth $5,000. Must produce acceptable work with occasional supervision. Is responsible for producing assigned quantity of work in the least amount of time possible, maintaining highest degree of quality possible. Must prevent waste of

materials and supplies, such as paper, ink, chemicals, and solvents. Is responsible for the accurate reproduction of customer's job. An error in reproduction could necessitate a reprint, resulting in a double use of materials, supplies, and production time, which could mean a total or partial loss of profit. Will consult with supervisor when in doubt about any aspect of a printing assignment. Is responsible for making supervisor aware of errors found in artwork, camerawork, negative layout, or platemaking, before continuing production process.

7. Job Knowledge

Must be able to read instructions and interpret specifications set forth in job order. Must be able to understand manufacturers' specifications presented in press operator's manual, material processing instructions, and chemical processing instructions. Must be able to make adjustments, prepare, operate, and maintain press. Must be able to understand and remember verbal instructions. Must have knowledge of arithmetic. Must know how to use measuring rule. Must know how to use basic hand tools. Must have a practical knowledge of machinery involving gears, cams, eccentrics, reciprocating levers, pulleys, drive belts,and electric motors and switches. Must have sufficient knowledge of press and related equipment to permit successful operation of press without direct supervision. Must have knowledge of working properties of various weights and textures of paper. Must know how to use all shop chemicals and inks available for the operation of the press. Must know how to process printing plates for production and storage. Must be familiar with shop procedures involved in processing a job through printing and on to finishing operations.

8. Mental Application

Must be alert to the possibility of flaws in image on printing plate. Proofreads plate, comparing it to customer's copy, to detect possible errors in image. Must be able to cope with changes in working properties of paper due to changes in humidity. Must occasionally expect press run interruption, to print rush job, and then return to previous assignment. Rush job may require using paper of a different size and weight. This change demands readjustment of the feeding, printing, and delivery units. A change in color may be required in this change over, neccessitating a quick color washup of inking unit. Must be able to make

these changes quickly, efficiently, and safely. Must be alert to possibility of injury when making change-overs at unusually fast pace. Occasionally must decide on the acceptability of printing quality in order to complete job quickly, taking intoconsideration customer's quality requirements and quantity of run. Must be able to keep press feeding consistently during run, simultaneously making press adjustments if necessary. Consistent feed of sheets through press is necessary to obtain quality printing and to prevent jamming of sheets in printing unit. Must be constantly alert to prevent personal injury, when making adjustments on press during production run. Schedules printing assignments by grouping jobs involving similar paper and ink, when possible, to avoid time consuming change-overs. Must be able to work in noisy surroundings containing other presses and related printing machinery.

9. Dexterity and Accuracy

Good visual accuity is necessary for reading copy, plate images, negatives, and printed press sheets. Must be able to detect ink and chemical reactions on press rollers, plate, and paper. Must be able to visually detect changes in type when changing pressure adjustments on cylinders. Must be able to distinguish subtle color variations in paper and inks. Manipulative dexterity of fingers and hands is required for successful operation of press. During job makeready, press must be mechanically controlled with coordinated use of press and blower/vacuum switches. Coordination of hands is necessary in mounting and detaching press plates. Extreme accuracy and manipulative dexterity of fingers and hands is required in adjusting mechanisms such as thumb screws, adjusting screws and knobs, lock screws, pressure adjusting screws, eccentric shafts, and sheet guides. Must be able to make adjustments on eccentric shafts and bearings with screwdrivers and allen wrenches, to move press rollers to tolerances of .003". Normal manipulative dexterity of fingers and hands is required in loading paper into paper magazine and unloading printed sheets from paper receiver tray.

COMMENTS

10. Equipment, Materials, and Supplies
Equipment:

Printing Press: (Multilith Offset Press), Model 125[illegible] W, manufactured by Addressograph Multigraph Corporation, Cleveland, Ohio. A manually controlled, electrically powered machine used to produce single and multicolor printed sheets by the offset printing process. The machine consists of a dampening system, inking system, printing unit, paper feeding magazine, register board, and delivery unit. Will accomodate sheet sizes from 3"x5" to 11"x17", and paper thicknesses of 13 pound bond to heavy Bristol cover stock.

Ink Cartridge Gun: (Common Caulking Gun), distributed by a variety of manufacturers. A manually operated accessory tool used to force ink from ink cartridge nozzle into press ink fountain. Consists of perpendicular handle, manual trigger, and ratchet-latch system.

Ink Knife: A tool similar to a common putty knife, used to transfer ink from ink can to press ink fountain, and to remove ink from fountain.

Platemaker: (Vacuum Exposure Frame), Model 1480, manufactured by Addressograph Multigraph Corporation, Cleveland, Ohio. A manually operated, electrically controlled machine used to expose images onto pre-sensitized printing press plates, using negative layout flats. The machine consists of an exposure lamp, exposure timer, vacuum frame, and vacuum pump.

Materials:
Blanket: Rubber printing blanket, attaches to press blanket cylinder. Accepts image from plate and offsets it onto paper. Susceptible to wear, and damage from paper jam ups. Must be replaced when printing is affected by flaws in blanket

Dampener Roller Covers: Fabric covers applied to dampener ductor and form rollers. Accept and contain plate dampening solution. Must be replaced when worn or ineffective from soiling.

Paper: Light and heavy papers used in printing, serving various functions after printing.

Printing Plate: Aluminum plate, .006" thick, pre-sensitized with light sensitive emulsion. Plate image accepts ink and offsets it onto blanket.

Supplies:
Printers' ink (canned and cartridge types), dampening fountain concentrate, plate process gum, plate developing solutions, chemical plate cleaner, washup solvents, washup mats, cotton wipes, cleaning cloths, lubricating oil and grease.

11. Definitions of terms

Blower/Vacuum Switch: An electric switch that controls the power to the blower and vacuum units, but not to the press.

Fanning: A term used to describe the technique of manipulating a handful of paper in a way that will separate sheets, preventing the mechanical feeding of multiple sheets.

Form Roller: A roller that contacts the printing plate- the Multilith 1250 W contains one dampener form roller and two ink form rollers.

Jogger Guide: A reciprocating sheet side guide, located on the press register board, which presses sheet snugly against the stationary side guide.

Offset: A method of printing whereby the positive plate image is transferred (offset) in reverse onto the printing blanket; and then the reverse image on the blanket is transferred (offset) onto the press sheet.

Press Switch: An electric switch that controls the power to the press, but not to the blower/vacuum units.

Type Matter: Type produced for reproduction by typewriter or any other cold or hot type typesetting machinery.

12. General Comments:

Task 5. The single lever control is an optional device found on the Multilith 1250 W press. It simplifies the operation of the printing and impression units by allowing these units to be controlled by one lever during press operation, rather than by the four separate controls found on older model Multiliths. On Multilith presses not having this innovation, the form rollers can only be controlled by the form roller control knobs.

Task 5. Occasionally the offset press operator finds it necessary to make a plate when the original plate for the job contains flaws in processing, wears out, or contains errors in copy. He makes a plate with the platemaker, using a presensitized plate, a negative flat, and plate processing chemicals.

Task 5. The rubber printing blanket develops flaws from normal wear, compression from excessive impression cylinder pressures, accidental scarring by a tool or loose press component, or from smashes by paper jams in the cylinders, causing low spots and loss of image.